

Low Toxicity Corrosion Inhibitors for Smart Coatings, Phase I

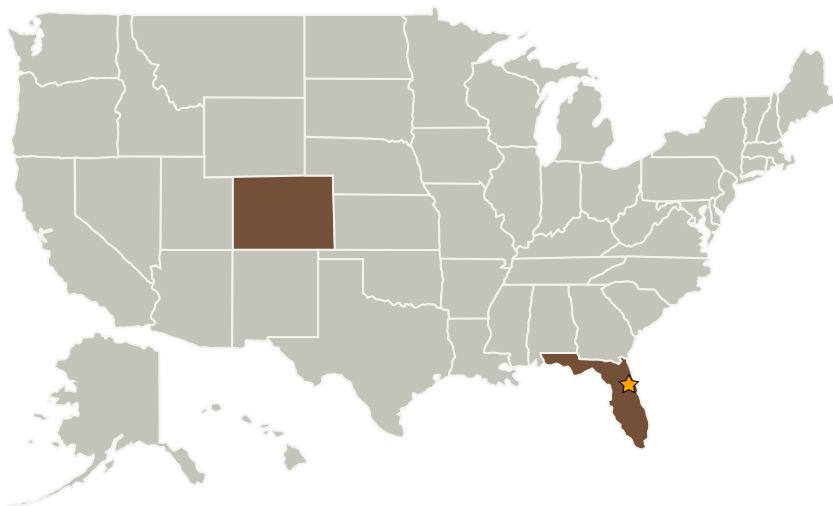
Completed Technology Project (2009 - 2009)



Project Introduction

The Kennedy Space Center (KSC) is located near one of the most corrosive natural environments in the world. Corrosion of KSC ground assets is exacerbated by the highly acidic exhaust of the Shuttle Solid Rocket Boosters (SRBs). During launch approximately 17 tons of hydrochloric acid are generated from the SRB exhausts. Thus while the launches are infrequent, they produce a highly acidic environment on coated structures leading to excessive corrosion. To mitigate the corrosion of carbon steel structures in and near the launch areas, KSC uses solvent-based topcoated inorganic zinc rich coatings. Regulations arising from Clean Air and other environmental legislation restrict the use of most solvents in paints and may restrict the use of inorganic zinc rich protective coatings. TDA will produce and test environmentally friendly smart coatings using its low-cost nanostructured carriers for corrosion inhibitors that provide smart release of the corrosion inhibitors via both pH-triggered and controlled release mechanisms. In the Phase I program TDA will demonstrate that its smart materials approach can provide higher-performance, environmentally-friendly protective coatings for NASA infrastructure and equipment. At the end of the Phase II effort we expect the technology to be at a technology readiness level of seven to eight.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission
Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

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Organizations Performing Work	Role	Type	Location
★ Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
TDA Research, Inc.	Supporting Organization	Industry	Wheat Ridge, Colorado

Primary U.S. Work Locations	
Colorado	Florida

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
 - └ TX12.1 Materials
 - └ TX12.1.5 Coatings